for 10/066,535 Machine Translation

PATENT ABSTRACTS OF JAPAN

JP 11-252322

(11)Publication number : 11-252322

(43)Date of publication of application : 17.09.1999

(51)Int.Cl. H04N 1/04
H04N 1/00
H04N 1/00
H04N 5/253

(21)Application number : 10-049383

(22)Date of filing : 02.03.1998

(71)Applicant : OLYMPUS OPTICAL CO LTD

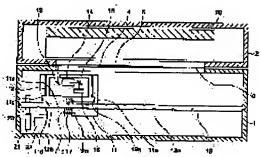
(72)Inventor : WASHIZU YOICHI

(54) IMAGE READER

(57)Abstract:

PROBLEM TO BE SOLVED: To read even a film of large size with high resolution by using one image-pickup lens and one image sensor in an image reader.

SOLUTION: A first shaft 18 is rotated to move an image sensor holder 12 in the pixel direction of a line image sensor. Then, a carrier 11 is moved in the direction orthogonal to a pixel array to pick up the first area of an original image. The first shaft 18 is inverted to move the image sensor holder 12 in the pixel direction of the line image sensor. Then, the carrier 11 is moved in a direction orthogonal to the pixel array, to have the image of a second area different from the first area, picked up.



LEGAL STATUS

[Date of request for examination] 17.01.2005

[Date of sending the examiner's decision of rejection] 06.12.2005

[Kind of final disposal of application other than the examiner's decision of rejection or application converted registration]

[Date of final disposal for application]

[Patent number]

[Date of registration]

[Number of appeal against examiner's decision of rejection]

[Date of requesting appeal against examiner's decision of rejection]

[Date of extinction of right]

* NOTICES *

1.This document has been translated by computer. So the translation may not reflect the original precisely.
2.**** shows the word which can not be translated.
3.In the drawings, any words are not translated.

CLAIMS

[Claim(s)]
[Claim 1] The image reader characterized by picturizing the 1st field of a manuscript image, moving a single dimension image sensor in the direction which intersects perpendicularly with a pixel train, and picturizing the 2nd **** which is made to move the Norikazu Gokami dimension image sensor in the direction of a pixel train, and is different from the 1st field of the above.
[Claim 2] The image reader characterized by having a single dimension image sensor, an image sensor maintenance means to hold this single dimension image sensor movable in the direction of a pixel train, and a maintenance means to hold the above-mentioned single dimension image sensor movable in the direction which intersects perpendicularly with a pixel train.
[Claim 3] The image reader according to claim 2 characterized by driving an image sensor maintenance means to hold a top Norikazu dimension image sensor movable in the direction of a pixel train, and a maintenance means to hold the above-mentioned single dimension image sensor movable in the direction which intersects perpendicularly with a pixel train, using a common driving means.

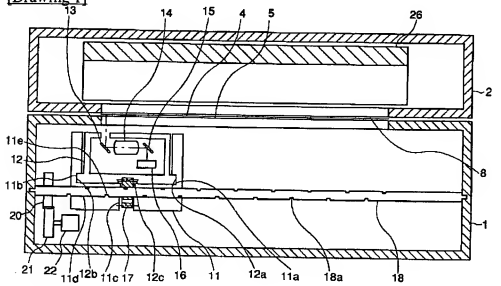
[Translation done.]

* NOTICES *

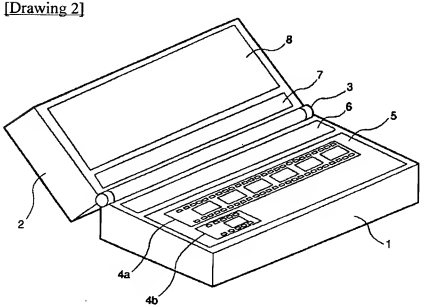
1.This document has been translated by computer. So the translation may not reflect the original precisely.
2.**** shows the word which can not be translated.
3.In the drawings, any words are not translated.

DRAWINGS

[Drawing 1]



[Drawing 2]



[Drawing 9]

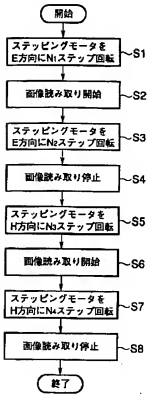
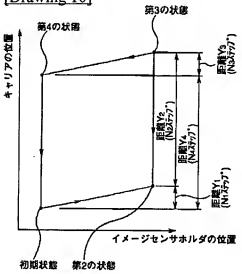
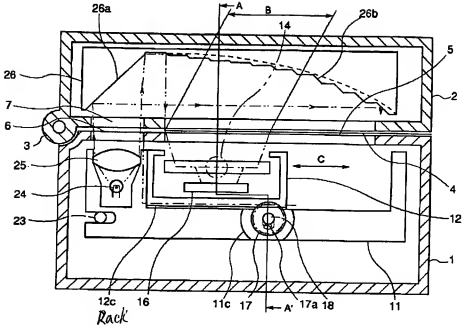


Fig. 9

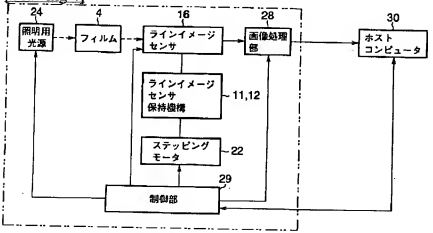
[Drawing 10]



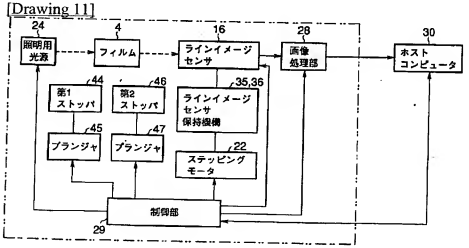
[Drawing 3]



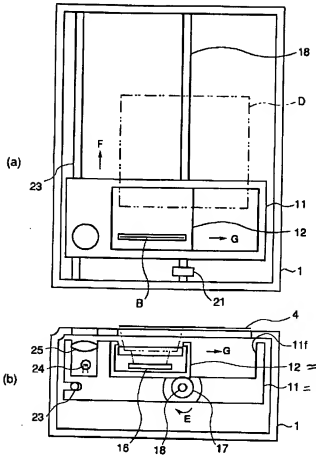
[Drawing 4]



[Drawing 11]

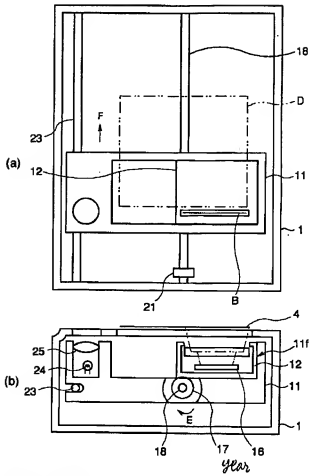


[Drawing 5]

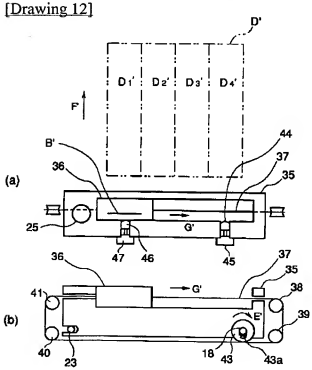


0037

[Drawing 6]



[Drawing 12]



[Drawing 13]

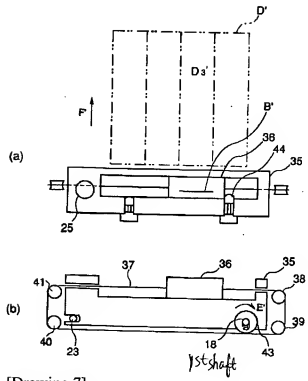
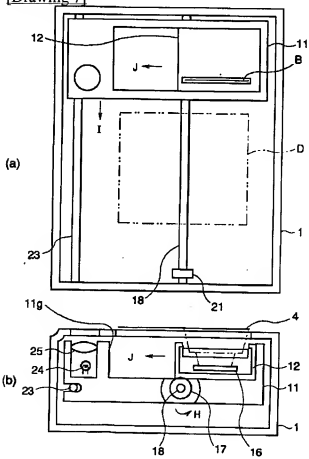


Fig 13.

[Drawing 7]



[Drawing 8]

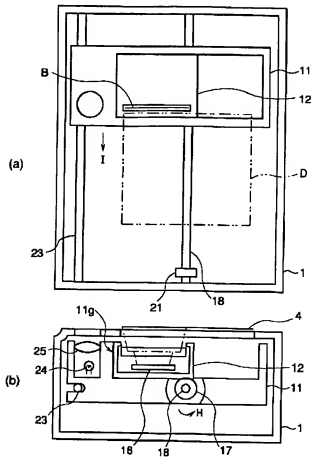
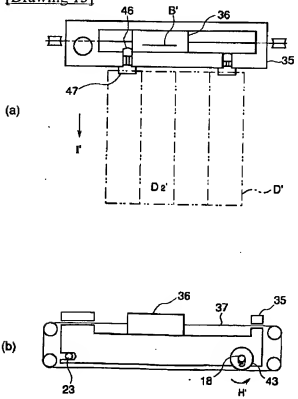
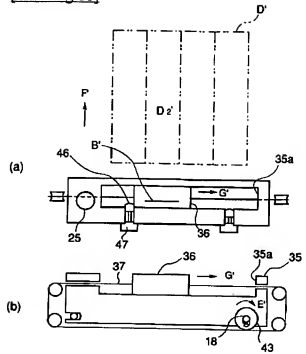


Fig. 8

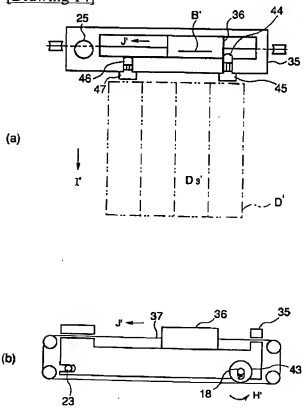
[Drawing 15]



[Drawing 16]



[Drawing 14]



[Drawing 17]

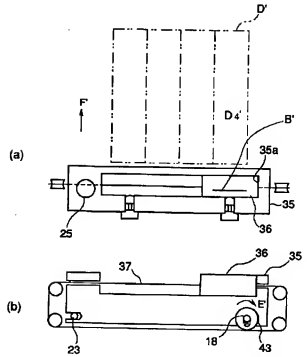
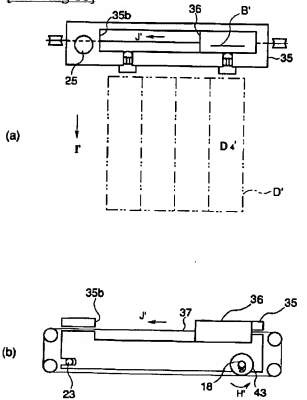


Fig.17

[Drawing 18]



[Drawing 19]

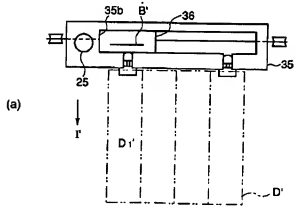
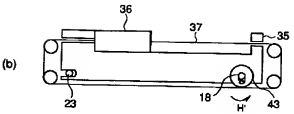
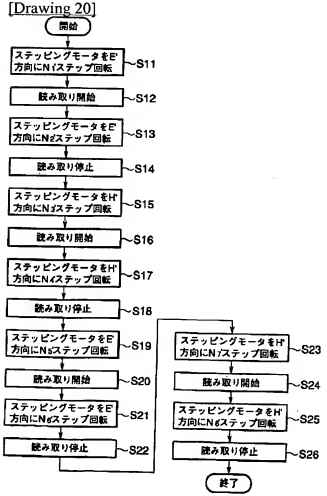


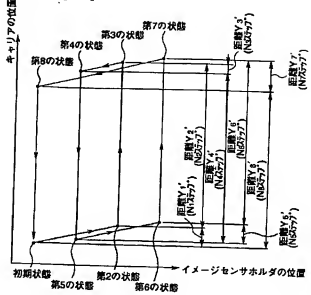
Fig. 19



[Drawing 20]



[Drawing 21]



[Translation done.]

* NOTICES *

1.This document has been translated by computer. So the translation may not reflect the original precisely.
2.**** shows the word which can not be translated.
3.In the drawings, any words are not translated.

DETAILED DESCRIPTION

[Detailed Description of the Invention]
[0001]
[Field of the Invention] This invention reads the upper images, such as a photographic film, and relates to the image reader transmitted to a computer etc. as a picture signal.
[0002]
[Description of the Prior Art] The image reader for conventionally reading the film of different size is already proposed variously. For example, the picture input device which used for JP,8-149364,A two image sensors corresponding to two image pick-up lenses with which scale factors differ, and these two lenses is indicated. This picture input device is [one lens] equivalent to the film of big size for the low scale factor, and the lens of another side is equivalent to the small film for the high scale factor. And he is trying to change using a mirror whether incidence of the image of a film is carried out to which lens.
[0003]
[Problem(s) to be Solved by the Invention] However, as mentioned above, with conventional equipment, the mirror drive for two image pick-up lenses, two image sensors, and a change was needed. Therefore, equipment was enlarged and it had the technical problem that cost will also become high.
[0004] This invention is made in view of the above-mentioned technical problem, and it aims at offering the possible small image reader of reading manuscript images, such as a film of different size, to high resolution using one single dimension image sensor.
[0005]
[Means for Solving the Problem] That is, this invention picturizes the 1st field of a manuscript image, moving a single dimension image sensor in the direction which intersects perpendicularly with a pixel train, moves that Norikazu Gokami dimension image sensor in the direction of a pixel train, and is characterized by picturizing the 2nd different **** from the 1st field of the above.
[0006] Moreover, this invention is characterized by having a single dimension image sensor, an image sensor maintenance means to hold this single dimension image sensor movable in the direction of a pixel train, and a maintenance means to hold the above-mentioned single dimension image sensor movable in the direction which intersects perpendicularly with a pixel train.
[0007] If it is in the image reader of this invention, while a single dimension image sensor is first moved in the direction which intersects perpendicularly with a pixel train, the 1st field of a manuscript image is picturized. Subsequently, the above-mentioned single dimension image sensor is moved in the direction of a pixel train, and the 2nd different **** from the 1st field of the above is made to be picturized. Thereby, since it is possible to move a single dimension image sensor two-dimensional, even if it is the single dimension image sensor of the limited number of pixels, the large range can be read with high resolution.
[0008] Moreover, if it is in the image reader of this invention, a single dimension image sensor is held movable in the direction of a pixel train by the image sensor maintenance means. And the above-mentioned single dimension image sensor is held movable in the direction which intersects perpendicularly with a pixel train with a maintenance means. Thereby, two-dimensional migration of a

single dimension image sensor is realizable by low cost.
[0009] He is trying it not only to move a single dimension image sensor in the direction of vertical scanning which intersects perpendicularly with a pixel train, but to move also in the direction of a pixel train in this invention. Thereby, even if it is the image sensor of the limited number of pixels, the large range can be read with high resolution.
[0010] Furthermore, since only one motor performs the driving source for moving a single dimension image sensor in the two directions, a miniaturization and low cost-ization are realizable.
[0011]
[Embodiment of the Invention] Hereafter, the gestalt of implementation of this invention is explained with reference to a drawing.
[0012] Drawing 2 shows the gestalt of implementation of the 1st of this invention, and is the appearance perspective view of an image reader.
[0013] This image reader is constituted in drawing 2 by the hinge 3 which connects the body section 1 which builds in the Rhine image sensors, the light source for lighting, a control section, etc., the covering 2 which presses down a manuscript, and these bodies section 1 and covering 2, and is supported free [closing motion].
[0014] On the body section 1, the manuscript installation side 5 which consisted of transparent flat-surface glass plates for making the pieces 4a and 4b of a film to read lay is established. The range of this manuscript installation side 5 is read with the image sensors in which it was built by the body section 1 and which are mentioned later. Moreover, the aperture 6 for sending the illumination light from the built-in source of the illumination light to covering 2 is formed in the body section 1. This aperture 6 is constituted by the transparent glass plate.
[0015] On the other hand, the aperture 7 for receiving the illumination light mentioned above through the aperture 6 of the body section 1 and the aperture 8 for illuminating the film which is a manuscript are formed in the above-mentioned covering 2. These apertures 7 and 8 are constituted by each with the flat-surface glass plate. Furthermore, in covering 2, the light guide section material for illuminating a manuscript via the inside of covering of the illumination light from the body section 1 is built in so that it may mention later.
[0016] Next, with reference to drawing 1 , drawing 3 , and drawing 4 , the internal structure of the image reader of drawing 1 is explained.
[0017] In the body section 1, it has the carrier 11 for vertical scanning. And in drawing 3 , the movable image-sensors holder 12 is held in the direction of arrow-head C at this carrier 11. Mirrors 13 and 15, and the image pick-up lens 14 and the Rhine image sensors 16 for bending an optical path are being fixed to the image-sensors holder 12. Moreover, the heights 12a and 12b of the image-sensors holder 12 have fitted in with the crevices 11a and 11b of a carrier 11, respectively. Therefore, the image-sensors holder 12 is movable in the direction of arrow-head C of drawing 3 which is the same direction as the pixel train of the Rhine image sensors 16 within the carrier 11.
[0018] The image formation location is adjusted so that the Rhine image sensors 16 may be suited, so that the focus location of the above-mentioned image pick-up lens 14 may suit the film 4 laid on the manuscript installation side 5. The range shown by B on the film 4 of drawing 3 is range which is carrying out image formation to the Rhine image sensors 16 with the image pick-up lens 14.
[0019] The image read with the Rhine image sensors 16 is outputted to the external host computer 30 by the image-processing section 28 in response to processing of conversion to a digital signal etc.
[0020] Rack 12c is prepared in the lower part of the above-mentioned image-sensors holder 12. The gear 17 which meshes with this rack 12c has fitted in with the 1st shaft 18. Although the gear 17 has fitted in with the 1st shaft 18, it can slide also on a hand of cut to the 1st shaft 18 also at shaft orientations.
[0021] The location of the shaft orientations of the above-mentioned gear 17 is positioned with the wall of pore 11c of a carrier 11. Spring section 17a is prepared in the gear 17 in one. The gear 17 is energized by the 1st shaft 18 by this spring section 17a. Therefore, if the 1st shaft 18 usually rotates in the predetermined direction, a gear 17 will also be rotated in this direction by frictional force. However, after an overload joins a gear 17 and exceeding frictional force, the gear 17 has structure which only the

1st shaft 18 rotates, without rotating.
[0022] As for the 1st shaft 18, spiral slot 18a is formed in the periphery, and both ends are supported by the case of the body section 1 pivotable. The gear 20 is attached in the end of this 1st shaft 18. And since this gear 20 meshes with the output gear 21 of a stepping motor 22, 1st SHAFUFUTO 18 is pivotable in the predetermined direction by the drive of this stepping motor 22. Thus, since the stepping motor 22 is used for the driving source of the 1st shaft 18, the rotation of a shaft is correctly controllable.
[0023] The carrier 11 has fitted in with the 1st shaft 18, as mentioned above, and projection 111e for fitting in with spiral slot 18a of the 1st shaft is prepared in 11d of fitting holes of a carrier. Therefore, a carrier 18 is movable to the shaft orientations of a shaft by rotating the 1st shaft 18.
[0024] Moreover, the 2nd shaft 23 as a guide for carrying out the parallel displacement of the carrier 11 to the shaft orientations of the 1st shaft 18 is being fixed to the lateral part of the range where the image-sensors holder 12 of a carrier 11 moves. This 2nd shaft 23 and 1st shaft 18 lie at right angles to the ** Rhine image sensors 16. Therefore, the actuation to which this carrier is moved can perform vertical scanning in the case of reading of an image.
[0025] Above the 2nd shaft 23 in the above-mentioned carrier 11, the lens 25 which condenses the illumination light of the light source 24 for lighting and this light source 24 for lighting is held. The illumination light enters in covering 2 through the aperture 6 prepared in the body section 1, and the aperture 7 prepared in covering 2. It reflects in 1st reflector 26a and 2nd reflector 26b of the reflective member 26 which were formed in covering 2, and the illumination light which entered in covering 2 illuminates the film 8 on the manuscript installation side 5.
[0026] 2nd reflector 26b is constituted by the detail according to two kinds of fields, a field parallel to a film 8, and the slant face of 45 degrees. And the ratio of the area of the 45-degree slant face to the area of this parallel side is small, and by the side far from the light source 24 for lighting, it is set up at the side near the light source 24 for lighting so that it may become large. That is, in the part near the strong light source of luminous intensity, the area reflected toward a film plane was reduced and the part far from the source of a taper of luminous intensity has increased conversely the area reflected toward a film plane. By this, the manuscript (film 4) is illuminated to homogeneity uniform.
[0027] In addition, although 2nd reflector 26a of the reflective member 26 is constituted from a gestalt of this 1st operation on the flat surface parallel to a film 8, and the slant face of 45 degrees, you may constitute from a smooth free form curve, without being restricted to this.
[0028] Moreover, although this lighting range is only range on the straight line which carries out image formation to the Rhine image sensors 16, since the light source 24 for lighting moves with vertical scanning of the Rhine image sensors 16, the reading part is always illuminated. Thus, by limiting the lighting range, compared with the structure which illuminates the manuscript installation side 5 whole, it is easy, and uniform lighting is realized easily.
[0029] Based on the directions from the external host computer 30, a control section 29 performs control of the light source 24 for lighting and the Rhine image sensors 16 which were explained above, the image-processing section 28, and a stepping motor 22.
[0030] Next, the actuation at the time of reading the image of a film 4 is explained with reference to drawing 5 thru/or drawing 10 .
[0031] Although drawing 5 thru/or drawing 8 are drawings having shown the condition that the reading location of the Rhine image sensors 16 moved, it omits and explains covering 2 in order to simplify explanation here. Moreover, the flow chart with which drawing 9 explains reading actuation of an image, and drawing 10 are drawings having shown the motion of the Rhine image sensors 16 by motion of a carrier 11 and the image-sensors holder 12.
[0032] In drawing 5 thru/or drawing 8 , it is equal to the magnitude of the manuscript installation side 5 the inside D of drawing in the range which it is going to read. Moreover, the inside B of the said drawing is the linear range on the film 4 which is carrying out image formation to the Rhine image sensors.
[0033] First, covering 2 is opened by the user and a film 4 is laid on the manuscript installation side 5. As long as installation to the piece of a film of 35mm size cut every six pieces and the manuscript

installation side 5, such as a 4 inch x5 inch sheet film, is possible for a film 4, the thing of what kind of size may be used.

[0034] In this way, covering 2 is closed after a film 4 is laid. Then, since a film 4 is sandwiched by the aperture 8 of the manuscript installation side 5 and covering 2, smoothness is secured also for the film which curved.

[0035] Next, a host computer 30 is operated by the user and reading initiation of a manuscript is ordered.

[0036] The condition by which it is shown in drawing 5 is an initial state. In this initial state, the part B by which image formation is carried out to the Rhine image sensors 16 is in the location evacuated outside the reading range D.

[0037] A stepping motor 22 is made to drive in a control section 29 based on the instruction from a host computer 30, and it is the 1st shaft 18 to the direction of arrow-head E N1 Only a step is rotated (step S1). thereby -- a carrier 11 -- the direction of arrow-head F of drawing 5 -- distance Y1 only -- it moves. Fig. 5

[0038] A gear 17 is also rotated in this direction with rotation of the direction of arrow-head E of the 1st shaft 18. And the image-sensors holder 12 which gears with a gear 17 by rack 12c is moved in the direction of illustration arrow-head G, being guided to a carrier 11. The 1st shaft 18 is N1. Rotation of only a step moves only the distance which the image-sensors holder 12 hits against 11f of walls of a carrier 11, and is attached. G

[0039] the 2nd condition by which it is shown in drawing 6 -- carrier 11Y1 only -- it is in the condition immediately after being moved, and guessing and attaching the image-sensors holder 12 to 11f of walls of a carrier 11. The part B which carries out image formation to the Rhine image sensors also in this location is in the outside of the reading range D. Reading of the image by the Rhine image sensors 16 is started from this 2nd condition by the control section 29 (step S2). Fig. 6

[0040] the 1st shaft 18 -- further -- the direction of illustration arrow-head E -- N2 if step rotation is carried out -- a carrier 11 -- the direction of illustration arrow-head F -- Y2 only -- it is moved and the right half of the range D which it is going to read is read (step S3). At this time, the image-sensors holder 12 within a carrier 11 is in the location already guessed and attached to the wall of a carrier 11. Therefore, even if the 1st shaft 18 rotates more than this, a gear 17 is not rotated but the 1st shaft 18 is in the condition of having raced within the gear 17. F

[0041] the 3rd condition by which it is shown in drawing 7 -- carrier 11Y2 only -- it is in the condition stopped in the location out of which was moved, finished reading in the right half of the reading range D, and the Rhine image sensors 16 came to the outside of the manuscript installation side 5. Here, reading of the image by the Rhine image sensors 16 is once interrupted (step S4). Fig. 7

[0042] Next, a stepping motor 22 is reversed, the 1st shaft 18 sets to drawing 7 , and it is N3 to the direction of arrow-head H. Only a step is rotated. then, the carrier 11 -- the direction of illustration arrow-head I -- Y3 only -- it is moved, and it is moved in the direction of illustration arrow-head J, and the image-sensors holder 12 is guessed and attached to 11g of walls of a carrier 11 (step S5). J

[0043] The 4th condition by which it is shown in drawing 8 is in the condition to which the image-sensors holder 12 was guessed and attached to 11g of walls in a carrier 11. The part B which carries out image formation to the Rhine image sensors 16 also in this location is in the outside of the reading range D. From here, reading of the image by the Rhine image sensors 16 is resumed (step S6).

[0044] and the 1st shaft 18 -- further -- the direction of illustration arrow-head H -- N4 if only a step is rotated -- the location of the image-sensors holder 12 within a carrier 11 -- remaining as it is -- a carrier 11 -- the direction of illustration arrow-head I -- Y4 only -- it is moved and the remaining left half of the reading range D is read (step S7). The carrier 11 and the image-sensors holder 12 which reading ended will have returned to the initial valve position, and will be in the initial state shown in drawing 5 . Here, a host computer 30 is told that image reading was completed from a control section 29 (step S8).

[0045] Although the read image data is transmitted to a host computer 30, whenever the Rhine image sensors 16 read the stage of one line, it may be spent, or it may be spent after 1 screen reading ******, or which case is sufficient as it. The image data sent to the host computer 30 is changed into the image data of one sheet there using image-processing software.

[0046] Next, the gestalt of implementation of the 2nd of this invention is explained.
[0047] In the gestalt of the 1st operation, although the approach of dividing the reading range into two and reading it which mentioned above was explained, the partial change of the configuration of the gestalt of this 1st operation is only carried out, the number of partitions can be set or more to three, and the larger range can be read more by high resolving.
[0048] The gestalt of the 2nd operation explains what was quadrisected as an example which increased the number of partitions.
[0049] In the gestalt of this 2nd operation, the number of the changed parts from the gestalt of the 1st operation mentioned above is two. The difference in the 1st is that having positioned the halt location in case the Rhine image sensors move in the direction of a pixel train only with the wall of a carrier newly prepared the positioning member other than the wall of a carrier. Moreover, the difference in the 2nd is having changed having used the rack and the gear for migration of an image-sensors holder so that a wire and a pulley might be used. In addition, although a rack and a gear may be used, since a rack may be enlarged, it will explain with the configuration which used the wire here.
[0050] Hereafter, the gestalt of this 2nd operation is explained with reference to drawing 11 thru/or drawing 21 .
[0051] Although drawing 11 thru/or drawing 19 are drawings having shown the condition that the reading location of the Rhine image sensors moved, the body section 1 and covering 2 grade are omitted for simplification of explanation. Moreover, the flow chart with which drawing 20 explains reading actuation of an image, and drawing 21 are drawings having shown the motion of the Rhine image sensors by motion of a carrier and an image-sensors holder.
[0052] In addition, in the gestalt of this 2nd operation, the same reference number shall be given to the same part as the gestalt of the 1st operation mentioned above, and explanation shall be omitted.
[0053] According to the same structure as the gestalt of the 1st operation, the image-sensors holder 36 is held movable in the carrier 35. These carriers 35 and the image-sensors holder 36 constitute the Rhine image-sensors drive.
[0054] It is fixed to the wire 37 and the above-mentioned image-sensors holder 36 is movable in the direction of illustration arrow-head G' and J'. The above-mentioned wire 37 is wound around the pulleys 38, 39, 40, and 41 for guiding this wire, and the pulley 43 for a wire drive. And the wire 37 is twisted around the pulley 43 once [at least] or more so that a wire 37 may not slide on the pulley 43 for a wire drive.
[0055] Moreover, although the pulley 43 has fitted into the 1st shaft 18, it can slide also on a hand of cut to this 1st shaft 18 also at shaft orientations. The location of the shaft orientations of a pulley 43 is the same as that of the positioning structure of the gear 17 in the gestalt of the 1st operation mentioned above, and is positioned with the wall of the pore of the carrier which is not illustrated.
[0056] Furthermore, spring section 43a is prepared in the above-mentioned pulley 43 in one. The pulley 43 is energized by the 1st shaft 18 by this spring section 43a. Therefore, if the 1st shaft 18 usually rotates, a pulley 43 will also rotate by frictional force. However, if an overload joins a pulley 43 and frictional force is exceeded, only the 1st shaft 18 will rotate a pulley 43, without rotating.
[0057] The 1st stopper 44 with which the image-sensors holder 36 moves in the direction of illustration arrow-head G', and acts on a carrier 35 in the near location of wall 35a of a carrier 35 is attached. The insertion and detachment of this 1st stopper 44 to the tooth space to which the image-sensors holder 36 moves are attained with the plunger 45. The 2nd stopper 46 on which similarly the image-sensors holder 36 moves in the direction of illustration arrow-head J', and acts in the near location of wall 35b of a carrier 35 is attached. The insertion and detachment of this 2nd stopper 46 to the tooth space to which the image-sensors holder 36 moves are attained with the plunger 47.
[0058] Next, the actuation at the time of reading the image of the film by this image reader is explained.
[0059] In drawing 12 thru/or drawing 19 , Din drawing ' is the range which it is going to read, and is equal to the magnitude of a manuscript installation side. Moreover, Bin said drawing ' is the linear range on the film which is carrying out image formation to the Rhine image sensors 16. Furthermore, D1 in drawing ' - D4 ' is each range in the case of quadrisecting and reading reading range D'.

[0060] Drawing 12 shows the initial state. At this time, partial B' which carries out image formation to the Rhine image sensors is in the location evacuated besides reading range D'.
[0061] The 1st stopper 44 is projected by introduction and the plunger 45, and, subsequently to the direction of illustration arrow-head E', the 1st shaft 18 is N1. Only a step is rotated (step S11). Then, a carrier 35 is moved in the direction of illustration arrow-head F' only for distance Y1 '. Moreover, if the 1st shaft 18 rotates in the direction of illustration arrow-head E', since a pulley 43 will also rotate in this direction, it is pulled by the wire 37, and is moved in the direction of illustration arrow-head G', and the image-sensors holder 36 is applied and attached to the 1st stopper 44. This condition is in the 2nd condition shown by drawing 13 (step S12).
[0062] Furthermore, if the 1st shaft 18 rotates only N2 ' in the direction of illustration arrow-head E', while the location within the carrier 35 of the image-sensors holder 36 had been fixed, a carrier 35 will be moved in the direction of illustration arrow-head F' only for distance Y2 ' (step S13). And the part of range D3 ' is read. The 3rd condition by which it is shown in drawing 14 is in the condition which reading of range D3' ended (step S14).
[0063] Next, by the plunger 47, the 2nd stopper 46 is projected, it is by the plunger 45 and the 1st stopper 44 is evacuated to coincidence. And the 1st shaft 18 rotates only N3 ' in the direction of illustration arrow-head H' (step S15). Then, only distance Y3 ' is moved in the direction of illustration arrow-head I', and, as for a carrier 35, the image-sensors holder 36 is moved in the direction of illustration arrow-head J' in it at coincidence. The 4th condition by which it is shown in drawing 15 is in the condition immediately after guessing and attaching the image-sensors holder 36 to the 2nd stopper 46 (step S16).
[0064] Furthermore, if the 1st shaft 18 rotates only N4 ' in the direction of illustration arrow-head H', as for the location of the image-sensors holder 36, a carrier 35 will be moved in the direction of illustration arrow-head I' only for distance Y4 ' with immobilization (step S17). And the part of range D2 ' is read. The 5th condition by which it is shown in drawing 16 is in the condition which reading of range D2 ' ended (step S18).
[0065] Subsequently, the 2nd stopper 46 is evacuated. And the 1st shaft 18 rotates only N5 ' in the direction of illustration arrow-head E' (step S19). Then, only distance Y5 ' is moved in the direction of illustration arrow-head F', and, as for a carrier 35, the image-sensors holder 36 is moved in the direction of illustration arrow-head G' in it at coincidence. The 6th condition by which it is shown in drawing 17 is in the condition immediately after guessing and attaching the image-sensors holder 36 to wall 35a of a carrier 35 (step S20).
[0066] Here, if the 1st shaft 18 rotates only N6 ' in the direction of illustration arrow-head E', while the location of the image-sensors holder 36 had been fixed, a carrier 35 will be moved in the direction of illustration arrow-head F' only for distance Y6 ' (step S21). And the part of range D4 ' is read. The 7th condition by which it is shown in drawing 18 is in the condition which reading of range D4 ' ended (step S22).
[0067] Next, the 1st shaft 18 rotates only N7 ' in the direction of illustration arrow-head H' (step S23). Then, only I7 ' is moved in the direction of illustration arrow-head I', a carrier 35 hits against wall 35b of a carrier 35, as the image-sensors holder 36 is shown in drawing 19 , and it is moved by ****** (step S24).
[0068] Furthermore, the 1st shaft 18 rotates only N8 ' in the direction of illustration arrow-head H', and a carrier 35 is moved only for distance Y8 ' (step S25). And the part of range D1 ' is read (step S26). The carrier 35 and the image-sensors holder 36 which reading ended return to the initial state shown in drawing 12 .
[0069] Although the read image data is transmitted to a host computer 30 through the image-processing section 28, whenever the Rhine image sensors 16 read the stage of one line, it may be spent, or it may be spent after 1 screen reading ******, or which case is sufficient as it. The image data transmitted to the host computer 30 is changed into the image data of one sheet there using image-processing software.
[0070] Thus, in the gestalt of the 2nd operation, the cheap and easy stopper device for the structure of the gestalt of the 1st operation mentioned above is only added, the large reading range can be divided

into the number of arbitration, and it can read with high resolution.
[0071] Moreover, although the gestalt of this 2nd operation explained as quadrisection, if other numbers of partitions apply this approach, they are easily realizable.
[0072] In addition, according to the above-mentioned embodiment of this invention, the configuration like a less or equal can be obtained.
[0073] Namely, (1) Image reader characterized by having a single dimension image sensor, an image sensor maintenance means to hold this single dimension image sensor movable in the direction of a pixel train, and a maintenance means to hold the above-mentioned single dimension image sensor movable in the direction which intersects perpendicularly with a pixel train.
[0074] (2) An image reader given in the above (1) characterized by driving an image sensor maintenance means to hold the above-mentioned single dimension image sensor movable in the direction of a pixel train, and a maintenance means to hold the above-mentioned single dimension image sensor movable in the direction which intersects perpendicularly with a pixel train, using a common driving means.
[0075] (3) The above (1) characterized by having manuscript covering which pinches a manuscript with the manuscript installation side arranged in the upper part of the above-mentioned single dimension image sensor, and this manuscript installation side, and establishing the 1st light guide means for leading the illumination light from the light source to a manuscript in the above-mentioned manuscript covering, and an image reader given in (2).
[0076] (4) An image reader given in the above (3) characterized by having the 2nd light guide means for preparing the above-mentioned light source in a maintenance means to hold movable in the direction which intersects perpendicularly with the pixel train of a top Norikazu dimension image sensor, and drawing the illumination light from the above-mentioned light source in the above-mentioned manuscript covering.
[0077] Since according to the image reader given in the above (4) the light source was prepared in a maintenance means to hold a single dimension image sensor movable in the direction which intersects perpendicularly with a pixel train, and the 1st light guide means for leading the illumination light from the light source to a manuscript was established in manuscript covering and the 2nd light guide means was established, uniform lighting is attained even if it uses the point light source of a cheap incandescent lamp etc.
[0078] (5) The image reader characterized by picturizing the 1st field of a manuscript image, moving a single dimension image sensor in the direction which intersects perpendicularly with a pixel train, and picturizing the 2nd field which is made to move the Norikazu Gokami dimension image sensor in the direction of a pixel, and is different from the 1st field of the above.
[0079] (6) The image processing system characterized by having the image synthesizer unit which carries out creation of the synthetic image based on the output of the top Norikazu dimension image sensor at the time of picturizing **** in which the plurality of a manuscript image differs from the image reader of the above (5).
[0080] (7) The single dimension image sensor which picturizes a manuscript image, driving in the direction which intersects perpendicularly with a pixel train in order to acquire the 2-dimensional picture signal resulting from a manuscript image, The body of a scanner which has the driving means which drives this single dimension image sensor, It is the image reader which has manuscript covering for pinching the above-mentioned manuscript between the above-mentioned bodies of a scanner. The above-mentioned body of a scanner It has the light source driven synchronizing with migration in the direction which intersects perpendicularly with the pixel train of a top Norikazu dimension image sensor. The above-mentioned manuscript covering The image reader characterized by having the reflective member which carries out distributed reflection of the flux of light from the above-mentioned light source, and illuminates the image pick-up field of the above-mentioned manuscript image from a direction opposite to a top Norikazu dimension image sensor to homogeneity.
[0081] (8) The above-mentioned light source is an image reader given in the above (6) characterized by being the point light source of an incandescent lamp etc.
[0082] (9) An image reader given in the above (2) characterized by preparing the friction engagement

member raced when the load beyond a predetermined value joins the transfer section which transmits the driving force from the above-mentioned driving means to the above-mentioned image sensor maintenance means.

[0083]

[Effect of the Invention] According to this invention, the possible small image reader of reading manuscript images, such as a film of different size, to high resolution can be offered using one single dimension image sensor as mentioned above.

[Translation done.]